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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/929,821	08/14/2001	I-Fan Wang	USFFIL.121A	8832
20995	7590	08/19/2004	EXAMINER	
KNOBBE MARTENS OLSON & BEAR LLP			MENON, KRISHNAN S	
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FOURTEENTH FLOOR			PAPER NUMBER	
IRVINE, CA 92614			1723	

DATE MAILED: 08/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/929,821	Applicant(s) WANG ET AL.	
	Examiner Krishnan S Menon	Art Unit 1723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 and 43-51 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 and 43-51 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims 1-15 are pending.

Double Patenting

Claim 43 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 1. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-4, 8, 14,15, and 43-51 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by, or in the alternative, 35 USC 103(a) as being unpatentable over Wang et al (US6,045,899).

Wang teaches a cellulosic membrane as in claims 1-3 as follows:

Claim 1: A cellulosic membrane, the membrane cast into flat sheet (col 8 lines 22-37) from a dope comprising a cellulosic polymer and a solvent (col 4 lines 30-35), the membrane having a first porous face having a first average pore diameter, a second porous face having a second average pore diameter, and a porous supporting structure

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therebetween wherein the supporting structure comprises a reticulated network of flow channels, the first and second average pore diameters having an asymmetry of at least about 2:1, and wherein the porous faces and the porous supporting structure comprise a network of structural surfaces capable of contacting a filter stream (col 3 lines 9-26, col 5 line 65-col 6 line 34). Membrane is substantially free of macrovoids (col 7 lines 2-15; the '899 reference teaches that asymmetric membranes can be prepared from mixed cellulose esters by the methods mentioned in the prior arts – col 4 lines 30-35).

The limitation, “a nonpolymer nonsolvent, ..., wherein the nonpolymer nonsolvent comprises from about 20 wt% to about 55 wt% of the dope”, is considered part of the process of making the membrane, since the non-solvent is not retained in the membrane, and the amount of non-solvent as recited in the claim does not seem to be crucial to form the properties of the membrane because such an argument does not seem to have support in the specification as originally filed (large range and large number of non-solvents), unless the applicants provide evidence to that effect. “[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” In re *Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Claim 2: The membrane of Claim 1, wherein the asymmetry between the average pore diameters of the first porous face and the second porous face is at least about 5:1. (Col 6 lines 30-34)

Claim 3. The membrane of Claim 1, wherein the asymmetry between the average pore diameters of the first porous face and the second porous face is at least about 10:1. (Col 6 lines 30-34)

Claim 4. The membrane of Claim 1, wherein the asymmetry between the average pore diameters of the first porous face and the second porous face is at least about 20:1. (Col 6 lines 30-34)

Claim 8. The membrane of Claim 1, wherein the cellulosic polymer comprises a cellulose ester. (col 4 lines 30-34)

Claim 14. The membrane of Claim 1, wherein the dope comprises a dispersion of the cellulosic polymer in the solvent. – process, In re Thorpe

Claim 15. The membrane of Claim 1, wherein the dope comprises a homogeneous solution of the cellulosic polymer in the solvent. – process, in re Thorpe.

Claims 43-51: the selection of non-solvents in these claims are considered equivalents, unless applicants can show otherwise with evidence (in which case, the corresponding claims would be subject to species restriction – MPEP 803.). The limitations in these claims are also process, as explained in the rejection in claim 1.

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2. Claims 1-15 and 43-51 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by, or in the alternative, under 35 USC 103(a) as unpatentable over, Del Pico (US 3,762,566).

Del Pico teaches cellulosic ultrafiltration membranes as in the instant claims as follows:

Claim 1: A cellulosic membrane, the membrane cast from a dope comprising a cellulosic polymer and a solvent (col 2 line 52 – col 4 line 67), the membrane having a first porous face having a first average pore diameter, a second porous face having a second average pore diameter, and a porous supporting structure therebetween wherein the supporting structure comprises a reticulated network of flow channels (col 4 lines 4-20, lines 38-66).

The limitation, “a nonpolymer nonsolvent, ..., wherein the nonpolymer nonsolvent comprises from about 20 wt% to about 55 wt% of the dope”, is considered part of the process of making the membrane – In re Thorpe. Also, the composition of the dope in this reference falls within the range recited – see col 8 lines 23-27: 2 ml formamide (non-polymer nonsolvent) falls in the range of 20-50% in the dope having 7 ml dioxane and 2g CA.

Del Pico does not specify ‘the first and second average pore diameters having an asymmetry of at least about 2:1, the asymmetry between the average pore diameters of the first porous face and the second porous face is at least about 5:1. (claim 2); 10:1 (claim 3); 20:1 (claim 4)’. However, since the membrane of Del Pico is similar to the membrane of the instant claims, and describes a similar structure (col 4 lines 5-65), the

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physical properties also should be inherently similar. The del Pico membrane has the first surface with the same or similar pore size as disclosed by the applicant, and there is nothing in the applicants' process that would convince one of ordinary skill in the art that the second surface will have a different pore size than what the del Pico membrane would have. Where applicant claims a composition in terms of a function, property or characteristic and the composition of the prior art is the same as that of the claim but the function is not explicitly disclosed by the reference, the examiner may make a rejection under both 35 U.S.C. 102 and 103, expressed as a 102/103 rejection. "There is nothing inconsistent in concurrent rejections for obviousness under 35 U.S.C. 103 and for anticipation under 35 U.S.C. 102." *In re Best*, 562 F.2d 1252, 1255 n.4, 195 USPQ 430, 433 n.4 (CCPA 1977). This same rationale should also apply to product, apparatus, and process claims claimed in terms of function, property or characteristic. Therefore, a 35 U.S.C. 102/103 rejection is appropriate for these types of claims as well as for composition claims.

Claim 5. The membrane of Claim 4, wherein the membrane has a molecular weight cut-off ranging from about 10k Daltons to about 300k Daltons (col 7 lines 15-25).

Claim 6. The membrane of Claim 4, wherein the membrane has a molecular weight cut-off ranging from about 10k Daltons to about 50k Daltons. (col 7 lines 15-25).

Claim 7: The membrane of Claim 4, wherein the membrane has a molecular weight cut-off ranging from about 10k Daltons to about 30k Daltons. (col 7 lines 15-25).

Claim 8. The membrane of Claim 1, wherein the cellulosic polymer comprises a cellulose ester. (col 6 lines 30-40; col 8 lines 23-26)

Claim 9. The membrane of Claim 1, wherein the cellulose ester comprises a cellulose acetate (col 6 lines 30-40)

Claim 10. The membrane of Claim 1, wherein the cellulose acetate is selected from the group consisting of cellulose diacetate, cellulose triacetate, cellulose acetate butyrate, cellulose acetate propionate, cellulose nitrate, methyl cellulose, and mixtures thereof (col 6 lines 30-40)

Claim 11. The membrane of Claim 1, wherein the cellulosic polymer on a surface of the membrane comprises cellulose. (col 6 lines 30-40)

Claim 12. The membrane of Claim 1, wherein the cellulose is produced via hydrolyzation of the membrane: [product by process: In re Thorpe] (col 6 lines 30-40)

Claim 13. The membrane of Claim 1, wherein the cellulose is produced via saponification of the membrane [product by process: In re Thorpe].

Claim 14. The membrane of Claim 1, wherein the dope comprises a dispersion of the cellulosic polymer in the solvent. (col 8 lines 23-26)

Claim 15. The membrane of Claim 1, wherein the dope comprises a homogeneous solution of the cellulosic polymer in the solvent. (col 8 lines 23-26)

3. Claims 1-15 and 43-51 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by, or in the alternative, under 35 USC 103(a) as unpatentable over, Ohtani et al (US 4,097,383).

Ohtani teaches a cellulosic membrane comprising surface A having pore size 0.01-10 micron, and surface B having 2 to 100 times the pore size of surface A – see

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col 3 lines 62-67. Re macrovoids, since the membrane is split in the middle and the porosity is clearly defined, there are inherently no macrovoids. [Where applicant claims a composition in terms of a function, property or characteristic and the composition of the prior art is the same as that of the claim but the function is not explicitly disclosed by the reference, the examiner may make a rejection under both 35 U.S.C. 102 and 103, expressed as a 102/103 rejection. "There is nothing inconsistent in concurrent rejections for obviousness under 35 U.S.C. 103 and for anticipation under 35 U.S.C. 102." In re Best, 562 F.2d 1252, 1255 n.4, 195 USPQ 430, 433 n.4 (CCPA 1977). This same rationale should also apply to product, apparatus, and process claims claimed in terms of function, property or characteristic. Therefore, a 35 U.S.C. 102/103 rejection is appropriate for these types of claims as well as for composition claims.] The membrane is made from a dope with a non-polymer nonsolvent in the range of 20-50%: see example 1. Cellulosic material as in claims 8-10. The membrane possesses or inherently possesses the characteristics as claimed in claims 5-7: see ultrafiltration in col 4 lines 35-50, pore size range in col 3 lines 20-26. Claims 11-13: cellulosic or regenerated cellulose – col 1 lines 19-34. Claims 14,15 and 43-51 are product by process as explained in the previous rejections – In re Thorpe. Please note that the non-solvent is methanol and water, solvent is methylene chloride, and the %s fall in the ranges claimed (example 1)

Response to Arguments

Applicant's arguments filed 7/6/04 have been fully considered but they are not persuasive – process by product claims.

The examiner also wishes to revisit the matters covered under the two interviews (on May 5th and May 27th of 2004) and the declaration submitted on 2/17/04:

The declaration under 37 CFR 1.132 filed 2/17/04 is insufficient to overcome the rejection of claims based upon Wang (899) and Del Pico (566) references as set forth in the last Office action because:

Wang declaration stated that cellulosic membranes when prepared by the formulation of the Wang-899 reference created macrovoids, but the present invention did not have macrovoids. Therefore, the arguments were that the Wang'899 ref was not enabling, and the Del Pico reference did not talk about macrovoids at all, and therefore one of ordinary skill would not be able to know if the Del Pico membrane had macrovoids or not.

However, on further detailed analysis of the current specification with respect to the declaration and the Wang '899 ref, it is seen that the process in the Wang declaration falls within the range disclosed by the present specification, as shown in the following comparison table. Please note that the process conditions for casting the membrane in the Wang declaration are the same as that of example 1 of Wang'899.

<u>2. Wang 132 declaration has:</u>	<u>Present Specification (pages 9-11; ex 3,4):</u>
65.9% N-methyl pyrrolidone	30-80% as solvent
4.3% polyvinyl pyrrolidone	0.1 – 10% as 'surface porosity agent'

1.8% water and 19% polyethylene glycol	non-solvents; 5-55%, alone or mixed
rest cellulosic polymers	3-20% membrane polymer.
Dope temp = 25C	any temp [0051]
Gap = 24 mils	6 mils or more [0052]
Air RH = 65-70%	50-75%[0053]
Water bath temp = 40-45C	-2 to about 40C [0056]
Drying temp = 100C	50-100C [0057]

Formulation for the Wang declaration was taken from the Wang ref '899: see example 1 and the table in col 8. Since the example membrane made by the declaration has macrovoids, and the process is the same as in the present specification, the evidence from the declaration contradicts the applicant's claim of 'substantially free of macrovoids'. Moreover, the membrane from example 4 (Fig. 4a and b) shows macrovoids, similar to what is seen in the figure 1 of the declaration. Therefore, the declaration re the "macrovoids" is insufficient to overcome the references. The examiner apologizes for retracting the withdrawal of the del Pico ref in the interview summary of May 5,04.

Conclusion

This action follows an RCE, and has added a new reference and new rejection. Therefore, this action is made non-final.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krishnan S Menon whose telephone number is 571-272-1143. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L Walker can be reached on 571-272-1151. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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